(12.) $\sum_{n=1}^{\infty} (-1)^n \frac{x}{n} = x \sum_{n=1}^{\infty} \frac{(-1)^n}{n}$

This is x times alternating harmonic

$\Rightarrow$ converges $\forall x$ (c)

(13.) $\sum_{n=1}^{\infty} \left|(-1)^n \frac{x}{n}\right| = x \sum_{n=1}^{\infty} \frac{1}{n}$ harmonic series

$\Rightarrow$ converges only for $x=0$. (d)

(14.) $\ddot{y} = -g \quad \ddot{x} = h \quad \vec{v}_0 = \langle 1, 2 \rangle$

$y = -\frac{1}{2}gt^2 + 2t \qquad x = +\frac{1}{2}ht^2 + t$

$y = 0 \Rightarrow t = 0$ or $t = \frac{4}{g}$

$x\left(\frac{4}{g}\right) = \frac{1}{2}h\left(\frac{4}{g}\right)^2 + \left(\frac{4}{g}\right) = \boxed{\frac{8h}{g^2}} + \frac{4}{g}$ ← additional d when $h \neq 0$

(c)